

Title: Regional variations in travel energy consumption: Some evidence from Flanders

Authors and affiliation: Kobe Boussauw ; Frank Witlox, Geography Department, Ghent University

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Abstract

This paper examines the relationship between energy consumption, daily travel distance and spatial characteristics of the residential environment in Flanders (and partly also in Brussels), in the north of Belgium.

First, the link between spatial structure and energy consumption for home-to-work travel is studied, based on census data. Important regional variations in commute-energy consumption are noticed, which are related to the spatial-economic structure including aspects of population density and spatial proximity. It is found that mode choice appears to be of little impact for the energy performance of home-to-work travel at the scale of the Flanders region, while proximity between home and work locations is paramount.

Second, the assessment is extended to all quasi-daily trips that are reported in a limited survey, by means of regression analysis. Spatial proximity characteristics, such as general accessibility, residential density, land use diversity, job density, minimum commuting distance and proximity to facilities are employed to explain daily distances travelled. The obtained regression equation is used to map estimated daily distance travelled based on residential location.

We present some of the findings. First, variables based on the spatial distribution of jobs do not show significant effects on the travel distance. This qualifies the limited importance of the commute: today, mainly non-professional travel is growing. Second, residential density, land use mix and proximity to facilities keep upright as determining elements. Three, the share of variance explained by spatial characteristics is particularly small, suggesting a very weak relationship between the built environment and trip length. However, this relationship may become stronger in case transport would become more expensive, e.g. in a peak oil scenario. In this light, a further increase of residential density and land use mix in urban agglomerations may be a tool for curbing excessive mobility and preparing for the end of cheap oil.